to 0·4 of a minute. We suspect that Mr. Goodwin knows a good deal more about the capacity of the men for whom he is writing than we do.

W. E. P.

The Horticultural Note Book. Compiled by J. C. Newsham. Pp. xx+418. (London: Crosby Lockwood and Son, 1906.) Price 7*s.* 6*d.* net.

THE contents of this book are as disconnected as are the words in a dictionary. Anything like a "review" is, therefore, out of the question. We can only state the general nature of its contents and give an opinion as to the way in which the compiler has accomplished his task. As to its contents, they comprise "practical rules, data, and tables for the use of students, gardeners, nurserymen, and others interested in flower, fruit, and vegetable culture, or in the laying out and management of gardens."

This is a fairly comprehensive enumeration, but it is not complete, for we also find various tables which will be of service to those who have to deal with woodcraft or the sale of timber. The compiler has done his work well; he is evidently familiar with the ordinary requirements of his readers, and he has fulfilled them with judgment and accuracy.

With such a mass of detail to deal with it would be wonderful if misprints did not occur, but they are remarkably few. On p. 299 there is, however, a crop of such blemishes which should be removed in a future edition. We may suggest also that the tables on pp. 251, 252 be expunged as inadequate, and in point of accuracy not equal to the rest of the volume. We are glad to see various metrical tables added. No one who compares the regular definite proportions of the metrical system with the confusion of the ordinary lineal and land measures, to take one instance, can doubt the advantages of regular system over chaos. It is permissible to envy the next generation, whose labours will be so materially lightened by the general adoption of the new system.

The author has given not a few "miscellaneous" weights and measures, but he might have added more from the Covent Garden repertory, where cabbages are sold by the "mat," carrots by the "pad," cauliflowers by the "tally," to say nothing of "bundles," "bunches," "cases," and other indeterminate measures. A book of this kind is intended for reference purposes, and its value must be tested by frequent consultation. Tried by this test, we may say that we have found the book very serviceable. In a future edition a list of the commoner fungi and the plants on which they are parasitic would be desirable; for instance, we find no reference either to the ordinary or the American mildew attacking gooseberries, or to the fungous pests which commit such havoc with grapes, tomatoes, and cucumbers.

Funzioni poliedriche e modulari. By G. Vivanti. Pp. viii+437. Manuali Hoepli, 366–367. (Milano: Ulrico Hoepli, 1906.) Price 3 lire.

THE author tells us in his preface that he found Klein's "Vorlesungen über das Ikosaeder" and Klein and Fricke's "Theorie der elliptischen Modulfunctionen" "pretty stiff reading." Probably most students will sympathise with him and will give a ready welcome to this little book, which is intended to prepare the reader for the study of these classical treatises. The ground covered is approximately that of the last four chapters of Forsyth's "Theory of Functions" (excluding automorphism), but the subject-matter is discussed in much greater detail. The first part of the book deals with groups formed by substitutions of the form $z' = (\alpha z + \beta) \div (\gamma z + \delta)$, especially with the five finite (polyhedral) types of group and with the infinite (modular) group in which $\alpha, \beta, \gamma, \delta$ are integers such that $\alpha\delta - \beta\gamma = 1$. In the first few pages a group is defined and some of its more elementary properties proved. It must be confessed that these introductory sections are not quite satisfactory, and it is doubtful whether they would be readily intelligible to anyone who had no previous knowledge of group-theory. For instance, the author fails to make clear the distinction between a group and a semi-group, or that between an abstract group and the particular application he has in mind. The rest of part i. is, however, clear and readable, and should serve effectively the purpose intended by the author.

In the second half of the treatise the author discusses the invariants of the polyhedral and modular groups, the connection of the Schwarzian equation with polyhedral and modular equations, and the application of the polyhedral groups to the solution of algebraic equations. This part appeals to a very different class of readers; in fact, the author assumes a knowledge of elliptic functions, Riemann's surfaces, the existence theorem, Noether's curve, the Galois field theory, &c. The lack of balance between the two parts in this respect is unfortunate, if unavoidable. There are a few errors; for instance, the statement of § 104 seems to require modification when $n=6$, while on pp. 208 and 209 the difference between (n), $[n]$, and $\{n\}$ is not at all clear.

Hermann von Helmholtz. By Leo Koenigsberger. Translated by Frances A. Welby, with a preface by Lord Kelvin. Pp. xvii+440. (Oxford: Clarendon Press, 1906.) Price 16*s.* net.

THE German original of this book appeared in 1903, and was reviewed at some length in NATURE of July 2 in the same year (vol. lxviii., p. 193). The work of translation is admirably done in every way, and the English public owes a debt of gratitude to the translator for enabling it to study in its own language one of the most interesting careers of the nineteenth century. A moderate all-round scientific training is necessary and sufficient to enable the reader to follow the description of the greater part of Helmholtz's work; but, though mathematical symbols are avoided, probably no one who has not specialised to some extent in applied mathematics will find intelligible the account of his more abstruse mathematical researches.

Though Herr Koenigsberger makes the very most of the space at his disposal, yet the reader lays aside a book of 440 pages with a feeling that he has seen the merest sketch of Helmholtz's life. Probably no better comment could be made on the industry of the great man of science or on the versatility of his genius. To do full justice to his career a treatise of three times the length would perhaps be needed. As it is, the reader is bewildered at the rapidity with which his attention is turned from one epoch-making discovery to another, and tries in vain to follow the steps by which Helmholtz was led from one subject to another when, during the space of three years largely occupied with his professorial duties, he discussed in turn optics, nerve transmission, acoustics, hydrodynamics, geometry, electricity, hay-fever, and so on.

Though, on the whole, the book lays more stress on Helmholtz's work than on the details of personal interest, yet the author has a true instinct for recording just those incidents of Helmholtz's life which throw most light on his character and ideals, and reveal most clearly the influences which surrounded him. We lay down the book with a feeling of very real sympathy for the frequent illness and bereavement which cast a perpetual shadow over the plea-

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sures of a happy home and world-wide reputation, while we are conscious of a genuine admiration for the firm resolve to "make the most of his time" and to keep perpetually before him the remembrance of "how injurious megalomania may be for a student."

H. H.

Illustriertes Handbuch der Laubholzkunde. By C. K. Schneider. Pts. iii. and v. (Jena: Gustav Fischer, 1906.) Price 4 marks each.

THE general plan of this handbook on trees cultivated in Europe was explained in the notice of the first two parts that appeared in NATURE, November 24, 1904. The third part was issued early last year, and the fifth part—somewhat enlarged—completes the first volume.

The third part contains the final portion of the Berberidaceæ, the orders Menispermaceæ to Crassulaceæ, and part of the Saxifragaceæ, the largest genera being Berberis, Mahonia, Magnolia, and Ribes. The Drupaceæ and Pomaceæ, generally regarded as suborders of the Rosaceæ, here treated as orders, form the subject of the fifth part. Prunus, Padus, Pyrus, Sorbus, and Cratægus are large and difficult genera.

It becomes more apparent that Dr. Schneider favours subdivision, for, in addition to the suborders mentioned, subgenera such as Chænomelei are raised to generic rank, and some of the species would certainly be regarded by other authorities as varieties; also it is noticeable that the author does not confine himself to trees in cultivation. The book thus becomes more of a dictionary and less of a practical manual; but due credit must be given to the author for the enormous amount of energy expended, and for the searching and critical investigation of specimens that has been accomplished. The advantage of the rules laid down at Vienna last year becomes evident from the list of changes noted in the supplement.

Old-fashioned Flowers and other Open-air Essays. By Maurice Maeterlinck. Translated by A. Teixeira de Mattos. With illustrations by G. S. Elgood. Pp. vii+115. (London: George Allen, 1906.) Price 3*s.* 6*d.* net.

PUBLISHERS have to cater for readers of various tastes, and so we suppose there are some to whom the present little book will appeal. For ourselves we can but wonder that anybody thought it worth translating. The text is mostly purely rhapsodical, reminding us of Ruskin at his worst. There is very little said about flowers as flowers, and the moral and philosophical reflections present no striking novelty. The illustrations are attractive but over-coloured, and probably do not do justice to the artist's original drawings.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The January Meteors.

THE January meteors are seldom visible in England under favourable aspects, the weather being often adverse at this season. Moonlight will partly veil the display in 1907, and the best times to look for it will be on the evenings of January 3 and 4 during the two or three hours preceding moonrise.

The shower is sometimes as rich as an ordinary return of Perseids, and it always furnishes some bright, long meteors of an unusually conspicuous character. We have gathered a large number of double observations of Perseids and Leonids, and know their average heights very well, but very few real paths of the January Boötids (or Quadrantids) have ever been computed. It is desirable, therefore, that observers who are fortunate enough to notice any members of the latter shower should record their apparent paths with the greatest accuracy which the circumstances allow, with the view of finding their heights and radiants.

The position of the radiant point has been already well determined at 230°+53°, and it is not probable that we shall ascertain it more precisely until photography can effectively take the place of the eye in meteoric observation.

W. F. DENNING.

Stereoscopic Lantern Slides.

PROBABLY many people who have taken interest in stereoscopic photography at one time or another have regretted that there should be no simple means for showing the effect to a large audience.

As a matter of fact, this can be done very easily in either of two ways. A stereoscopic lantern slide is first made by photographing an ordinary stereoscopic pair of pictures. This pair of pictures is then projected upon the screen with an ordinary lantern. The stereoscopic effect is obtained by using either a mirror stereoscope or a prism stereoscope. The former consists of two small pieces of mirror held one in front of each eye. The observer has the screen, not in front of him, but on one side, say about 60° from the direction in which he is facing.

In each mirror the pair of pictures is seen, and by tilting one mirror with respect to the other, so that the two outside images are superposed, the picture suddenly leaps into relief. Of course, if the wrong pair be superposed the familiar inverted relief will appear. It is easy to mount the mirrors in a sort of spectacle frame, one of them being fixed and the other capable of rotation about a vertical axis.

It would not be difficult to explain to an audience of average intelligence the method of using such spectacles; the spectacles could be made at a very small cost, and the beauty of the effect would appeal to many.

Cases frequently arise in university lectures in which a stereoscopic presentation of slides would greatly simplify explanations, *e.g.* in biology.

The other method is to use a single small achromatic prism, which is held in front of one eye, the refracting angle being vertical and directed towards the other eye. Of course, prisms of different angles are required for different distances, but a single prism can be made to suffice for a large range by twisting it about a vertical axis, without greatly impairing the "stereoscopism."

At first sight one might think that the effect could only be seen by observers situate in or near a plane bisecting the screen at right angles, but this is not the case. Indeed, anyone who has worked with stereoscopic photographs must have been struck with the ease with which the eyes will adjust themselves to pictures which are not correctly aligned, and experiment also shows that the two pictures need not be of the same size.

G. A. SHAKESPEAR.

The University, Birmingham, December 17.

Emerald Green Sky Colour.

WHILE on a short stay at St. Moritz I was much struck by the peculiar colour of the sky on the evening of December 10. It had been threatening snow most of the day, and a few flakes fell during the afternoon, the sky being overcast. At about 3.30 p.m. to 4 p.m. the sky cleared over the mountains towards the east, and revealed, instead of the usual blue, a fairly large expanse of vivid emerald green. None of us had ever seen it before, so that we all stopped. I should be much pleased if any of the readers of NATURE could give me some idea of the cause of this unusual phenomenon.

J. W. NOBLE.

Kurhaus Lenzerheide, St. Moritz, December 18.

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